

## I CLAIM:

1. A lighting module comprising:
  - a) two or more light-emitting elements for generating light having one or more colours, said two or more light-emitting elements positioned into a  
5 closely packed array;
  - b) a primary optical system optically connected with the two or more light-emitting elements, said primary optical system providing a means for light extraction from the two or more light-emitting elements; and
  - c) a secondary optical system optically connected with the primary optical  
10 system, said secondary optical system for mixing and collimating the light extracted from the two or more light-emitting elements.
2. The lighting module according to claim 1, wherein the each of the two or more  
15 light-emitting elements emit light having a colour selected from the group comprising red, blue, green, amber and white.
3. The lighting module according to claim 1, wherein the two or more light-emitting elements have a longest dimension, and spacing between the two or more light-emitting elements is less than twice the longest dimension.  
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4. The lighting module according to claim 1, wherein the two or more light-emitting elements have a longest dimension, and spacing between the two or more light-emitting elements is less than the longest dimension.
- 25 5. The lighting module according to claim 1, wherein the two or more light-emitting elements have a longest dimension, and spacing between the two or more light-emitting elements is less than half of the longest dimension.
6. The lighting module according to claim 1, wherein the primary optical system  
30 includes an optical element, wherein said optical element is configured as a refractive element, reflective element, holographic element or diffractive element.

7. The lighting module according to claim 1, wherein the primary optical system is formed from an encapsulation material.
- 5 8. The lighting module according to claim 7, wherein the encapsulation material is patterned or textured.
9. The lighting module according to claim 6, wherein the primary optical system further comprises an encapsulation material positioned between the two more light-emitting elements and the optical element.
- 10 10. The lighting module according to claim 6, wherein the primary optical system comprises a dome lens enclosing the two or more light-emitting elements.
11. The lighting module according to claim 1, wherein the secondary optical system includes an optical element, wherein said optical element is configured as a refractive element, reflective element, holographic element, diffractive element or a diffusive element.
- 15 12. The lighting module according to claim 11, wherein the secondary optical system includes a light pipe or a light guide.
- 20 13. The lighting module according to claim 11, wherein the secondary optical system comprises a reflective element having reflective wall surfaces and a perpendicular cross section and an axial cross section.
- 25 14. The lighting module according to claim 13, wherein the perpendicular cross section is selected from the group comprising circular, square, hexagonal and octagonal.
- 30 15. The lighting module according to claim 13, wherein the reflective element has a symmetric axial cross sectional shape.
16. The lighting module according to claim 13, wherein the axial cross sectional shape flares or tapers at an exit aperture of the reflective element.

17. The lighting module according to claim 13, wherein the axial cross sectional shape is parabolic, elliptical, hyperbolic, straight, curved or segmented.
- 5 18. The lighting module according to claim 13, wherein the reflective element has a length and the secondary optical system further comprises a diffusive optical element positioned along the length.
- 10 19. The lighting module according to claim 1, wherein the primary optical system and the secondary optical system are integrally formed.
- 15 20. The lighting module according to claim 1, further comprising a tertiary optical system optically coupled to the secondary optical system, the tertiary optical system for shaping a beam of the mixed and collimated light extracted from the two or more light-emitting elements.
- 20 21. The lighting module according to claim 20, wherein the tertiary optical system comprises an optical element configured as a refractive element, diffractive element, diffusive element or holographic element.
22. The lighting module according to claim 20, wherein the tertiary optical system and the secondary optical system are configured for mating interconnection.